CHAPTER 1

GENERAL

This chapter describes the duty assignments of personnel assigned to a floating crane. Also described are the hand signals used during crane operations and the overall safety procedures and requirements that must be observed during crane operations.

DUTY ASSIGNMENTS

The number of personnel and their duty assignment aboard a floating crane vary. The number of people assigned and their specific MOS will also vary depending on the mission and where the floating crane is assigned. The 100-ton floating crane has an authorized strength of 15 personnel whose primary duties are described below.

CHIEF ENGINEER (CRANE MASTER), 510A1 WARRANT OFFICER

As commanding officer of the crane, the crane master is responsible for technical training, safety, and conduct of the crew. The crane master is a qualified engineering warrant officer and has first-hand information on all moving parts of the crane. He is responsible for the employment and operation of the crane. His responsiblities include:

- Directing the operation, repair, and maintenance of crane equipment.
- Conducting daily inspections of the crane to ensure that security, operating conditions of the crane and its equipment, general maintenance, and living conditions are consistent with Army standards.
- Ensuring that a record of operation for each item of PIP-affected machinery, the engine, and the motor is kept on a daily basis in the engineer log, DA Form 4993 (Harbor Boat Engine Department Log for Class A and B Vessels).
- Ensuring that the deck log is maintained on a daily basis. The deck log, DA Form 4640 (Harbor Boat Deck Department Log for Class A and B Vessels), is the record of daily operational activities that have occurred aboard the crane and is signed each day by the crane master. It includes the time, number, and weight of each lift made and a brief description of the prevailing weather.
- Preparing repair and maintenance requests and ordering spare parts, tools, and supplies for the crane.
- Maintaining the air-conditioning and refrigeration units aboard the crane.
- Ensuring that personnel are trained and qualified to signal for crane operations and to communicate from crane to shore and crane to other vessels by radio.
- Supervising the deactivation, towing preparation (including the rigging and display of towing lights and day signals), and activation of the floating crane.

BOATSWAIN (WATERCRAFT NCO), 61B30, E-6

The boatswain assumes the duties of the crane master during the crane master's absence. The boatswain is responsible for the safety of all personnel working above deck with the crane during its operations; for personnel training in fire, abandon-ship, and man-overboard drills; and for first aid. He is also responsible for maintenance and upkeep of the outside hull from the waterline up, the barge machinery house, and the boom. His responsibilities include the following:

- Ordering and storing deck stores and supplies.
- Communicating by radio with shore, other floating craft, and the crane operator.
- Operating the capstans, winches, and windlass during anchoring operations or while warping the crane into dockside or alongside vessels.
- Entering the daily operations of the crane, including the number of lifts, weights, operating times, brief description of weather, and other pertinent data, in the deck log (DA Form 4640) for the crane master's signature.

- Activating the outside portion of the floating crane above the waterline.
- Preparing the crane for oversea delivery.
- Ensuring that the proper towing lights and day shapes are displayed.

SENIOR MARINE ENGINEER, 61C20, E-5

The senior marine engineer is responsible for the general upkeep and preventive maintenance of all machinery aboard the crane. He is also responsible for the following:

- Starting and stopping the main and auxiliary engines and generators.
- Monitoring the operation of the engines for indications of trouble.
- Repairing the main and auxiliary engines as required, and keeping a log on the running time of all engines, the repairs made, and the repairs to be made by higher category maintenance.
- Inspecting and repairing the capstans, winches, and windlasses and lubricating all moving parts of the crane as required by current lubrication orders (LOs).
- Supervising the loading of fuel and water aboard the crane.
- Having daily inspections of the bilges and, if needed, having them pumped dry.
- Painting and cleaning all engine spaces and machinery.
- Supervising and training assigned enginemen.

CRANE OPERATOR, 62F20, E-5

The crane operator uses the proper controls to move the crane as directed by the signalman, He must be alert constantly to the proper operation of the crane controls and be certain that the safety limit switches are functioning properly. During sluing operations, when the signalman is out of the line of vision, the crane operator must be extremely cautious to prevent the boom from striking the masts, yardarms, guys, antennas, or any part of the superstructure of another vessel, as well as dockside power lines, structures, and poles. When the crane operator cannot see the load being lifted or transported, he must be able to see the signalman and carry out every signal by properly coordinating the controls. The crane operator's responsibility for accident prevention is greater than that of any other crew member. Another responsibility is to train the assistant crane operator in all aspects of crane operations.

ASSISTANT CRANE OPERATOR, 62F10, E-4

The assistant crane operator will operate the crane under the direct supervision of the crane operator until it is determined that the individual can safely operate the crane. The assistant crane operator will assist the crane operator in the daily routine.

POWER GENERATOR EQUIPMENT REPAIRER, 52D10, E-4

The power generator equipment repairer is responsible for the entire electrical system of the crane and for the daily checkout of the electrical panel board, controller, navigation lights, signal lights, and floodlights. These responsibilities include–

- Checking for grounds, blown fuses, and short circuits.
- Making certain that the correct operating voltage is available.
- Making repairs as required.
- Acting as signalman for communications between crane and shore or crane and other floating craft during crane operations.

ENGINEMAN, 61C10, E-4 AND E-3

Two enginemen are authorized for the crane. The enginemen lubricate the main and auxiliary engines, hoisting machinery, and deck machinery. They also operate the main and auxiliary engines under the supervision of the senior marine engineer. They are

responsible for packing and repairing pipe fittings, keeping the engine room clean, and assisting the senior marine engineer in daily engine room duties.

RIGGER, 51C10, E-4

The rigger is responsible for rigging and reeving the crane. The rigger inspects the wire hoisting rope daily for frayed or broken wires and replaces the wire rope as required. The rigger is also responsible for–

- Lubricating the crane's sheaves daily.
- Inspecting the upper and lower load blocks daily for cracks or worn pulleys and pins; repairing or replacing components as required.
- Making up the wire rope sling to be used for hoisting.
- Ensuring that the correct sling is used for each lift.
- Being the signalman for the barge crane operator.
- Knowing all hand signals used for hoisting operations.
- Estimating the weight of each lift and relaying this information to the crane operator so the operator can adjust the boom for the weight to be lifted.
- Storing all lifting equipment and slings.

SEAMAN, 61B10, E-4 AND E-3

The seamen handle lines and hawsers when docking, anchoring, or moving into position for making lifts. Moreover, seamen must–

- Assist in maintaining and operating deck machinery.
- Stand watches: transmit signals and communications' as directed by the crane master.
- Clean decks and quarters.
- Scrape paint and maintain the outside area of the barge, machinery house, and barge equipment.
- Splice and repair shipboard lines.
- Assist the rigger in splicing wire rope slings and bridles and in reeving and repairing wire rope.

SENIOR COOK, 94B30, E-6

The cook (authorized for the 100-ton crane) is responsible for requesting and maintaining an adequate supply of food aboard the crane barge. The cook prepares and cooks fruits, vegetables, meats, seafood, and poultry. He must be able to bake rolls, breads, cakes, and pies. Moreover, the cook must maintain the galley, stove, and refrigerator according to prescribed sanitary standards.

SIGNALS

The crane operator regulates the movements of the crane according to signal instructions from the signalman. These signals must be given correctly to ensure proper handling of equipment and materials and to safeguard personnel. The signalman, as opposed to the crane operator, has an unobstructed view of the entire operation.

IMPORTANCE OF SIGNALMAN

Crane operations require close coordination between the crane operator and the signalman. The signalman not only sees what is going on but also hears. If, at deck level, something is seen or heard that is not right, the signalman must immediately stop the operation. Communications between the signalman and the crane operator must be rapid, clear, and understood. Sometimes it is necessary to have more than one signalman. For example, when the crane is being used to handle equipment in the hold of a vessel, a signalman would be required in the hold as well as on deck. The signalman on deck would be in full view of both the crane operator and the signalman in the hold. During this operation, the signals are given by the signalman in the hold to the signalman on deck. The

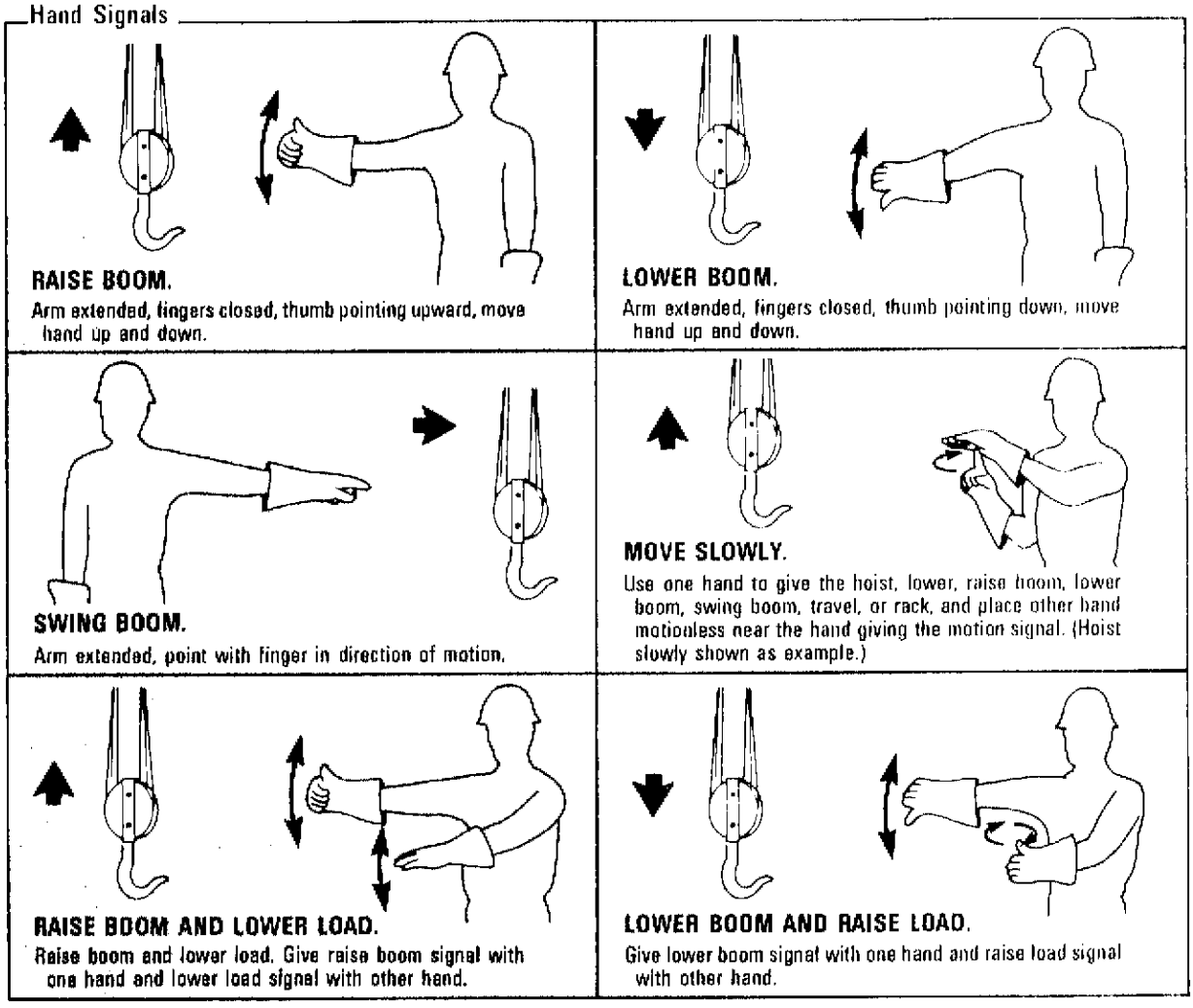
signalman on deck, in turn, conveys the signals to the crane operator When two signalmen are required, exact duplication of signals must be communicated between them for correct movement by the crane operator.

TYPES OF SIGNALS

Two types of signals may be used, depending on the visibility of the signalman to the crane operator, Hand signals avoid confusion and are the most reliable type of communication inadequate lighting is available. Light signals may be used during darkness or inclement weather. The crane cannot be operated efficiently and safely without thorough coordination and understanding between the operator and signal. man. There must be strict adherence to a prearranged set of rules and signals.

When hand signals are used, the hand movement must be made in phase with the work in progress, The crane operator could misinterpret unnecessary hand movement, which could create a hazardous condition The use of white or brightly colored gloves by signalmen will give the crane operator a better visual contact. The signalman should always face the crane operator when giving hand signals

Hand Signals



RAISE BOOM.
Arm extended, fingers closed, thumb pointing upward, move hand up and down.

LOWER BOOM.
Arm extended, fingers closed, thumb pointing down, move hand up and down.

SWING BOOM.
Arm extended, point with finger in direction of motion.

MOVE SLOWLY.
Use one hand to give the hoist, lower, raise boom, lower boom, swing boom, travel, or rack, and place other hand motionless near the hand giving the motion signal. (Hoist slowly shown as example.)

RAISE BOOM AND LOWER LOAD.
Raise boom and lower load. Give raise boom signal with one hand and lower load signal with other hand.

LOWER BOOM AND RAISE LOAD.
Give lower boom signal with one hand and raise load signal with other hand.

The illustration shows the meaning and method of conveying each type of hand signal. In some instances, two signals have the same meaning but are conveyed by different methods.

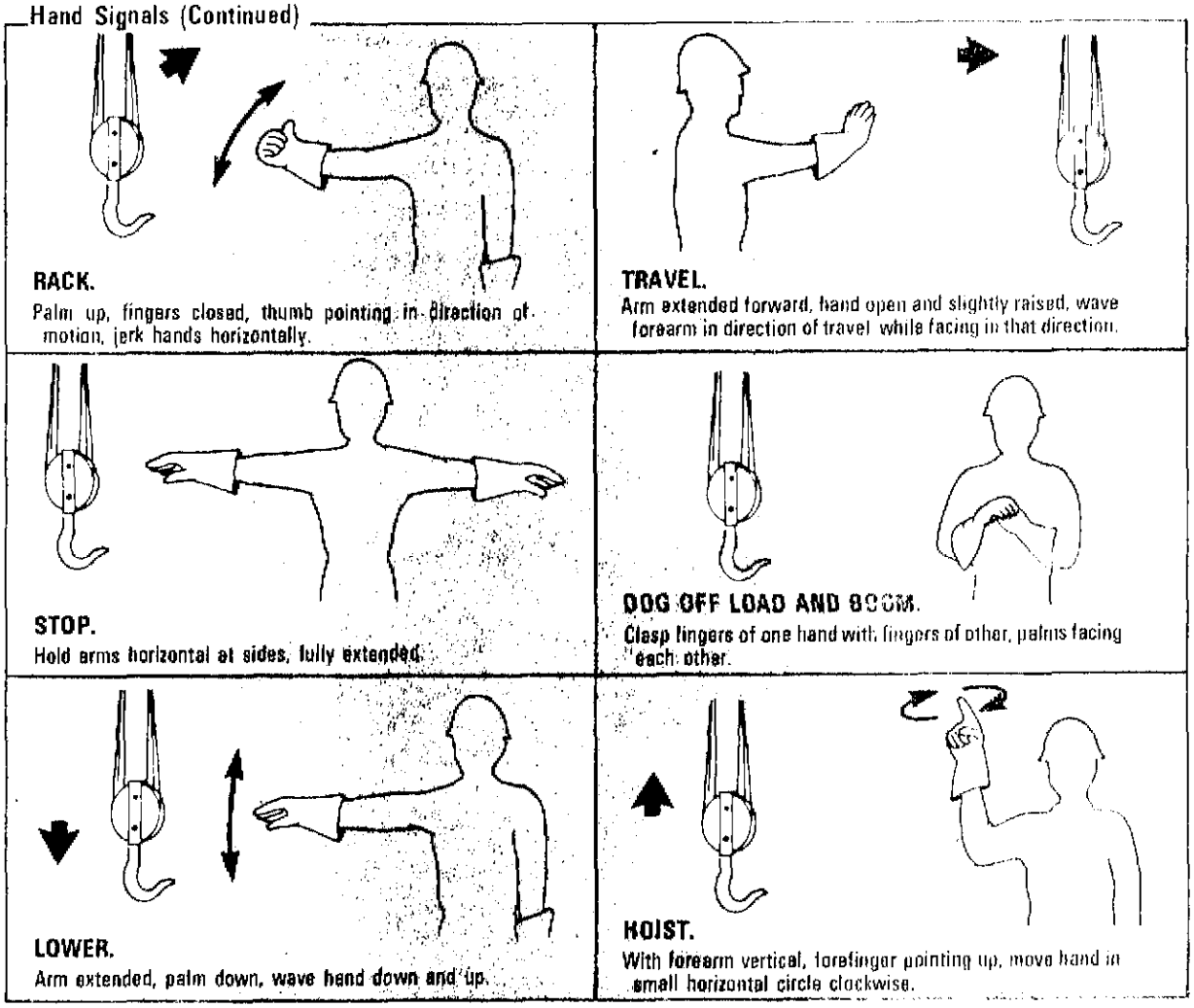
Light signals are conveyed in the same manner as the hand signals described previously, by holding a flashlight in each hand. The signalman will place a colored lens in each flashlight to distinguish his lights from other lights. Light signals must be given slowly and precisely. The signalman should get in a position where the background is least lighted to aid the crane operator in distinguishing the signal lights,

The type of signal used depends on these factors:

ŽVisibility is the deciding factor as to which signal will be used. During darkness, light signals will be used instead of hand signals, especially if the area is not illuminated enough by floodlight.

ŽDistance between thecrane operator and the signalman must be considered when determining the signal to be used. A relay signalman may he required when the distance creates a visibility problem.

Hand Signals (Continued)



SAFETY

Adequate safety precautions must be followed by all personnel during crane operation. Proper supervision and good judgment are paramount when considering personnel safety. The following specific safety precautions will be observed:

- Caution will be used when handling metallic components of cranes. At certain frequencies, high-frequency shipboard radio transmitter antennas in the vicinity can induce voltage in the rigging that can cause painful burns on contact.
- Personnel riding on load hooks is strictly prohibited.
- Loose articles of clothing that could become entangled in operating equipment will not be worn.
- Operating personnel will keep a secure footing and firm balance at all times.
- Loads must not be rotated or suspended over personnel.
- Before performing maintenance, equipment will be properly secured. Power will be turned off to remain off and tagged "Out of Service."
- Safe working load of the crane will not be exceeded.
- Communications will be maintained among all personnel involved in any operation. A person who is familiar with the signal code in use will be assigned to act as signalman when the crane operator cannot see the load being handled.
- Personnel will not be permitted to be in the potentially hazardous area between a swinging load and a fixded object.
- Before a load or empty lifting gear is raised, lowered, or rotated, a warning will clearly be given to personnel near the operation.
- When making a heavy lift, the load will be hoisted slowly for a minimal distance to check the sling for soundness and the load for balance.
- Operators will not leave the winch controls with a load suspended on the rig. They must deactivate electrical power to all winches in their rig before leaving the controls unattended. A signalman or a winch tender will be employed to aid an operator who cannot see the winches and both areas of the rig's operation.